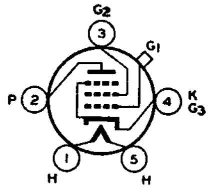


RCA-39/44

SUPER-CONTROL R-F AMPLIFIER PENTODE



The 39/44 is a heater-cathode tube of the remote cut-off type suitable for use primarily as a radio-frequency amplifier, intermediate-frequency amplifier, and mixer in receivers designed for its characteristics. The 39/44 is effective in reducing cross-modulation and modulation-distortion over the usual range of signal voltages without the use of antenna potentiometers or auxiliary volume-control switches. An explanation of the Super-Control feature is given on page 16.

CHARACTERISTICS

Heater Voltage (A. C. or D. C.)			6.3	Volts
Heater Current			0.3	Ampere
Plate Voltage	90	180	250 *max.*	Volts
Screen Voltage	90	90	90 *max.*	Volts
Grid Voltage (Minimum)	–3	–3	–3	Volts
Plate Current	5.6	5.8	5.8	Milliamperes
Screen Current	1.6	1.4	1.4	Milliamperes
Plate Resistance	0.375	0.75	1.0	Megohm
Amplification Factor	360	750	1050	
Transconductance	960	1000	1050	Micromhos
Transconductance (At –42.5 volts bias)	2	2	2	Micromhos
Grid-Plate Capacitance (With shield-can)			0.007 *max.*	μμf
Input Capacitance			3.5	μμf
Output Capacitance			10	μμf
Bulb				ST-12
Cap				Small Metal
Base				Small 5-Pin

INSTALLATION

The base pins of the 39/44 fit the standard five-contact socket. The socket may be installed to hold the tube in any position.

For heater operation and cathode connection, refer to INSTALLATION for type 6A8.

The screen voltage for the 39/44 may be obtained from a section of the B-battery, from a fixed or variable tap on a voltage divider across the supply voltage, or from a portion of the supply. Care should be taken to keep the impedance between the screen and cathode as low as possible.

When the 39/44 is self-biased, a resistor in series with the high-voltage supply may be used for obtaining the screen voltage. This is possible because of the stable screen-current characteristic of the 39/44 pentode. The resistor method of securing the screen voltage is limited to circuits where the screen-voltage supply does not exceed 180 volts as a maximum. The value of this resistance should be such that under the conditions of minimum grid bias and maximum plate current the screen voltage will not exceed 90 volts. A resistance of approximately 80000 ohms will be suitable.

Complete shielding of all stages is necessary if maximum gain per stage is to be obtained.

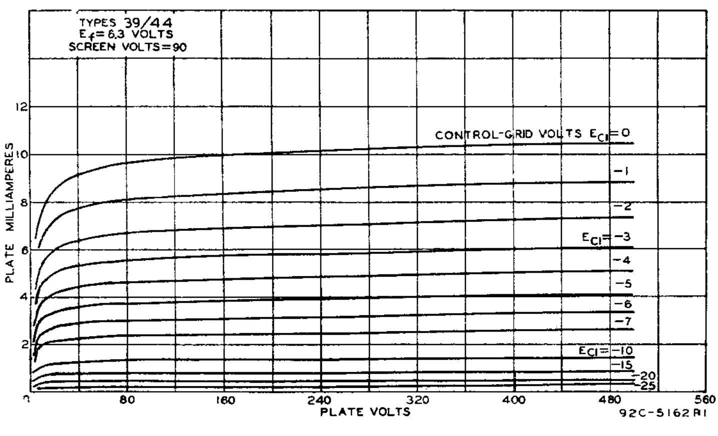
APPLICATION

As a **radio-frequency** and **intermediate-frequency amplifier**, the 39/44 **should** be operated as shown under CHARACTERISTICS. In general, properly **designed** radio-frequency transformers are preferable to interstage coupling **impedances**, especially in cases where a high impedance B-supply may cause oscillation **below** radio frequencies.

Volume control of receivers designed for the 39/44 may be accomplished **by** variation of the negative grid bias of this tube. In order to obtain adequate volume control, an available grid-bias voltage of approximately 45 volts will be required. The exact value will depend upon the circuit design and operating conditions. This voltage may be obtained from a potentiometer, a bleeder circuit, a variable **resistor** in the cathode circuit, or from a separate source.

As a **detector mixer** in superheterodyne receivers, the 39/44 may be utilized. Suitable operating voltages for such service are: Plate voltage, 90 to 250 volts; screen voltage, 90 volts; grid voltage, –7 volts (approx.), with a 6-volt peak swing from the oscillator. By varying the grid bias on the mixer in conjunction with that on the r-f and/or the i-f stages, additional control of volume may be accomplished.

AVERAGE PLATE CHARACTERISTICS



AVERAGE PLATE CHARACTERISTICS

